



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,993	08/06/2003	Norifumi Nishikawa	500.43001X00	2625

24956 7590 02/14/2006

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
1800 DIAGONAL ROAD
SUITE 370
ALEXANDRIA, VA 22314

EXAMINER

PYO, MONICA M

ART UNIT PAPER NUMBER

2161

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/634,993	Applicant(s) NISHIKAWA ET AL.	
	Examiner Monica M. Pyo	Art Unit 2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/6/03 & 11/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-18 are present for examination.
2. Claims 1-18 are rejected.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 8/6/2003 and 11/12/2004 were filed. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

4. The disclosure is objected to because of the following informalities:
 - The Specification contains an embedded hyperlink and/or other form of browser-executable code. (pg. 1, [0003]) Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.
 - A term "LAM" is misspelled and should be corrected to "LAN". (pg. 1, [0004])Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "bit map" in claim 13 is a relative term which renders the claim indefinite. The term "bit map" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably

Art Unit: 2161

apprised of the scope of the invention. The term “bit map” is once mentioned in the Specification (see Pg. 4, [0052]) and is not described enough to fully understand the term definition. Thus, it is the Examiner’s interpretations to understand the term “bit map” as “incremental difference” from last update.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 7-8, 10-12, and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0165868 by Prakash (hereafter Prakash).

Claims 1, 10 and 16:

Regarding Claim 1, Prakash discloses a database system comprising a center server, a single or a plurality of local servers, a first network for mutually connecting said center server and said local servers, local storage subsystems for storing local databases managed by said local servers, a center storage subsystem for storing replications of said local databases and a second network for mutually connecting said center server, center storage subsystem, local servers and local storage subsystems (Prakash: pg. 1, [0013]; pg. 3, [0045]; fig. 1b – SAN environment), wherein

said center server includes replication requesting means for requesting said local servers to replicate local databases and data consolidating means for performing a process for consolidation of replicated local databases (Prakash: pg. 5, [0058-0059, 0066, 0086]; pg. 11, [0122]; figs. 14-15); and

each of said local servers includes local database freeze requesting means responsive to the database replication request to request a database management system to freeze said local database, and database replicating means for causing said local storage subsystem to replicate, in said center storage subsystem, said local database stored in said local storage subsystem (Prakash: pg. 9, [0098-0099; 0106]; figs. 17-19).

Claims 10 and 16 are also rejected based upon the same reasoning as Claim 1.

Claim 2:

Regarding Claim 2, Prakash in view of Cane disclose all limitation of Claim 1, *supra*. Additionally, Prakash discloses: wherein

said center storage subsystem includes replication local databases representing replications of said local databases stored in said local storage subsystems (Prakash: pg. 11, [0121-0122]; fig. 6);

each of said local storage subsystems includes remote volume replicating means for transferring information of an update applied to said database to said center storage subsystem through said second network (Prakash: pg. 8, [0089-0090]; fig. 16); and

said center storage subsystem reflects the transferred update information upon said replication local database (pg. 8, [0086]; fig. 15).

Claim 3:

Regarding Claim 3, Prakash in view of Cane disclose all the limitation of Claim 1, *supra*.

Additionally, Prakash discloses: wherein

each of said local storage subsystems includes remote volume splitting means for temporarily stopping transfer of update information between said local database and said replication local database and remote volume resynchronizing means for resuming the transfer of update information between said local database and said replication local database and transferring the update information accumulated in said local storage subsystem during interruption of the transfer of update information to said center storage subsystem (Prakash: pg. 4, [0051]; pg. 9, [0100]; fig. 18); and

a local database freeze operation and a remote volume split operation are executed on the basis of the request for database replication made to said local server from said center server and said local database is split from said replication local database to thereby synchronize these databases mutually (Prakash: pg. 9, [0102]).

Claim 4:

Regarding Claim 4, Prakash discloses all the limitation of Claim 1, *supra*. Additionally, Prakash discloses wherein:

said local server includes remote volume split completion notifying means for informing said center server that the split by said remote volume splitting means is completed and local database freeze release requesting means for requesting release of the freeze of local database (pg. 6, [0066, 0072]; pg. 9, [0102]; pg. 11, [0122]); and

when the split between said replication local database and said local database is completed, said local server issues the remote volume split completion notice and a local database freeze release request (pg. 5, [0061]; pg. 9, [0102]; pg. 11, [0122]).

Claim 7:

Regarding Claim 7, Prakash discloses all the limitation of Claim 1, *supra*. Additionally, Prakash discloses: wherein

said center server includes data consolidation completion notifying means for informing said local servers of completion of data consolidation (pg. 6, [0066, 0072]; pg. 9, [0102]; pg. 11, [0122]); and

each of said local servers includes remote volume resynchronization requesting means responsive to the notice by said data consolidation completion notifying means to request said remote volume resynchronizing means to resume transfer of update information between said local database and said replication local database (Prakash: pg. 4, [0051]; pg. 9, [0100]; fig. 18).

Claims 8 and 18:

Regarding Claim 8, a center server in a database system having a center server, a single or a plurality of local servers, a first network for mutually connecting said center server and said local servers, local storage subsystems for storing local databases managed by said local servers and a second network for mutually connecting said center server, center storage subsystem, local servers and local storage subsystems (Prakash: pg. 1, [0013]; pg. 3, [0045]; fig. 1b), wherein

said center server includes replication requesting means for requesting said local servers to replicate local databases and data consolidating means for performing a process for

Art Unit: 2161

consolidation of said replicated local databases (Prakash: pg. 5, [0058-0059, 0066, 0086]; pg. 11, [0122]; figs. 14-15).

Claim 18 is also rejected based upon the same reasoning as Claim 8.

Claim 11:

Regarding Claim 11, Prakash discloses all the limitation of Claim 10, *supra*.

Additionally, Prakash discloses: wherein

said local storage subsystems transfer information of updates applied to said local databases to said center storage subsystem through said second network (Prakash: pg. 8, [0089-0090]; fig. 16); and

said center storage subsystem reflects the transferred update information upon replication local databases representing replications of said local databases stored in said local storage subsystems (Prakash: pg. 11, [0121-0122]; fig. 6).

Claim 12:

Regarding Claim 12, Prakash discloses all the limitation of Claim 10, *supra*.

Additionally, Prakash discloses: wherein

said local storage subsystems respond to a request from said local servers based on a request for replications of local databases made by said center server to said local servers to temporarily stop the transfer of update information between each of said local databases and each of said replication local databases so as to split remote volumes and respond to a request for resynchronization based on a database consolidation completion notice from said center server to said local servers to resume the transfer of update information between each of said local databases and each of said replication local databases so that the update information accumulated

Art Unit: 2161

in said local storage subsystems during interruption of the transfer of update information is transferred to said center storage subsystem to perform remote volume resynchronization (Prakash: pg. 4, [0051]; pg. 6, [0066, 0072]; pg. 9, [0100, 0102]; fig. 18).

Claim 15:

Regarding Claim 15, Prakash discloses a process program for executing a process in a local server in a database system having said center server, a single or a plurality of local servers, a first network for mutually connecting said center server and said local servers, local storage subsystems for storing local databases managed by said local servers, a center storage subsystem for storing replications of said local databases, and a second network for mutually connecting said center server, center storage subsystem, local servers and local storage subsystems (Prakash: pg. 1, [0013]; pg. 3, [0045]; fig. 1b), said process program comprising:

a module responsive to a request for replication of said database from said center server to request a database management system to freeze said local database; a module for requesting said local storage subsystem to cause it to replicate, in said center storage subsystem, said local database stored in said local storage subsystem; a module for receiving a notice of split completion from said local storage subsystem based on said replication request; and a module for informing said center server of the split completion (Prakash: pg. 5, [0061]; pg. 6, 0066, 0072]; pg. 9, [0102]; pg. 11, [0122]).

Claim 17:

Regarding Claim 17, Prakash discloses all the limitation of Claim 16, *supra*.

Additionally, Prakash discloses: wherein

each of said local storage subsystems includes a remote volume replicating unit which transfers information of an update applied to said local database to said center storage subsystem through said second network (Prakash: pg. 3, [0045]; fig. 1b); and

said center storage subsystem includes a volume replicating unit which reflects the transferred update information upon said replication local database (Prakash: pg. 5, [0058-0059]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 5, 9 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prakash as applied to claims 1-4, 7-8, 10-12, and 15-18 above, and further in view of the article "The Hitachi Freedom Storage Lightning 9900 for Optimized Storage Area Networks" written

Art Unit: 2161

by Hu Yoshida and Marie Dolcini (hereafter Yoshida), printed in June 2000 and published by Hitach Data Systems Corporation.

Claim 5:

Regarding Claim 5, Prakash discloses all the limitation of Claim 1, *supra*. Additionally, Prakash discloses: wherein

said center storage subsystem includes said replication local databases, volume replicating means for reflecting the update information applied to said replication local databases, volume splitting means for temporarily stopping the reflection of update information, and volume synchronizing means for resuming the reflection of update information (Prakash: pg. 9, [0100, 0102]; pg. 11, [0122]);

said center server includes center database freeze requesting means for making a request for database freeze and center database freeze release requesting means for making a request for release of freeze (Prakash: pg. 11, [0122]); and

said center server receives a remote volume split release requesting notice to issue the center database freeze request and volume synchronization request and when synchronization of volume is completed, executes the volume split operation and issues the center database freeze release request (Prakash: pg. 4, [0051]; pg. 9, [0100]; pg. 11, [0122]; fig. 18).

However, Prakash does not explicitly disclose: shadow images.

On the other hand, Yoshida discloses: shadow images.

It would have been obvious to a person having ordinary skill in the art to combine shadow images of Yoshida into the system for backing up and restoring information of Prakash to utilize the shadow images. Skilled artisan would have been motivated to incorporate the

Art Unit: 2161

Yoshida's teaching of shadow images in the Prakash's system for backing up and restoring information as suggested by Yoshida, which discloses "Command-line interfaces control data replication and fast resynchronization of logical volumes" (Yoshida: pg. 8, [Hitachi ShadowImage]).

Claim 9:

Regarding Claim 9, Prakash discloses all the limitation of Claim 8, *supra*. Additionally, Prakash discloses: further comprising:

means responsive to a notice of remote volume split completion based on a request for replication made to the local databases to request database freeze applied said replication local databases, means for requesting volume synchronization, means for requesting volume split when synchronization of volume is completed to perform volume replication for reflecting information of updates applied to said replication local databases, and means for requesting center database freeze release (Prakash: pg. 4, [0051]; pg. 9, [0100]; pg. 11, [0122]; fig. 18).

However, Prakash does not explicitly disclose: shadow images.

On the other hand, Yoshida discloses: shadow images.

It would have been obvious to a person having ordinary skill in the art to combine shadow images of Yoshida into the system for backing up and restoring information of Prakash to utilize the shadow images. Skilled artisan would have been motivated to incorporate the Yoshida's teaching of shadow images in the Prakash's system for backing up and restoring information as suggested by Yoshida, which discloses "Command-line interfaces control data replication and fast resynchronization of logical volumes" (Yoshida: pg. 8, [Hitachi

ShadowImage])).

Claim 13:

Regarding Claim 13, Prakash discloses all the limitation of Claim 10, supra.

Additioanlly, Prakash discloses: wherein

said center server responds to a notice of remote volume completion to request freeze of databases corresponding to said replication local databases and request volume synchronization to synchronize a bitmap portion and the replication local databases, and when the synchronization of volume is completed, requests volume split to perform volume replication for reflecting the update information applied to the replication local databases and thereafter requests release of the center database freeze (Prakash: pg. 4, [0051]; pg. 9, [0102]; pg. 11, [0122]).

However, Prakash does not explicitly disclose: shadow images.

On the other hand, Yoshida discloses: shadow images.

It would have been obvious to a person having ordinary skill in the art to combine shadow images of Yoshida into the system for backing up and restoring information of Prakash to utilize the shadow images. Skilled artisan would have been motivated to incorporate the Yoshida's teaching of shadow images in the Prakash's system for backing up and restoring information as suggested by Yoshida, which discloses "Command-line interfaces control data replication and fast resynchronization of logical volumes" (Yoshida: pg. 8, [Hitachi ShadowImage])).

Claim 14:

Regarding Claim 14, Prakash discloses a process program for executing a process in a center server in a database system having said center server, a single or a plurality of local

servers, a first network for mutually connecting said center server and said local servers, local storage subsystems for storing local databases managed by said local servers, a center storage subsystem for storing replications of said local databases, and a second network for mutually connecting said center server, center storage subsystem, local servers and local storage subsystems (Prakash: pg. 1, [0013]; pg. 3, [0045]; fig. 1b), said process program comprising:

a module for making a request to said local server for replication of said local database; a module for receiving a notice of remote volume split completion based on the replication request made to said database; a module for requesting database freeze of said replication local database; a module for requesting volume synchronization; a module for requesting volume split when the volume synchronization is completed to perform volume replication for reflecting update information applied to the replication database; and a module for thereafter requesting release of freeze of the center database (Prakash: pg. 4, [0051]; pg. 9, [0100, 0102]; pg. 11, [0122]; fig. 18);

However, Prakash does not explicitly disclose: shadow images.

On the other hand, Yoshida discloses: shadow images.

It would have been obvious to a person having ordinary skill in the art to combine shadow images of Yoshida into the system for backing up and restoring information of Prakash to utilize the shadow images. Skilled artisan would have been motivated to incorporate the Yoshida's teaching of shadow images in the Prakash's system for backing up and restoring information as suggested by Yoshida, which discloses "Command-line interfaces control data replication and fast resynchronization of logical volumes" (Yoshida: pg. 8, [Hitachi ShadowImage]).

Art Unit: 2161

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prakash as applied to 1-4, 7-8, 10-12, and 15-18 above, and further in view of U.S. Patent No. 5,757,669 issued to Christie et al. (hereafter Christie).

Claim 6:

Regarding Claim 6, Prakash discloses all the limitation of Claim 1, *supra*. Additionally, Prakash discloses: wherein

said center server has a replication source managing table for managing whether replications of replication source local databases are completed (pg. 4, [0048]; fig. 7); and

when synchronization between all the local databases managed by the local storage subsystems connected through said first and second networks and the replication local databases corresponding to all of said local databases is completed, said center server issues the center database freeze request, volume synchronization request, volume split request and center database freeze release request (Prakash: pg. 1, [0013]; pg. 3, [0045]; pg. 9, [0098-0099; 0106]; figs. 17-19).

However, Prakash does not explicitly disclose: replication source managing table.

On the other hand, Christie discloses: replication source managing table (Christie: col. 11, lns. 21-38 – Event Table).

It would have been obvious to a person having ordinary skill in the art to combine Event Table of Christie into the system for backing up and restoring information of Prakash to utilize the Event Table. Skilled artisan would have been motivated to incorporate the Christie's teaching of Event Table in the Prakash's system for backing up and restoring information as suggested by Christie, which discloses "At each site, there is a central file server or shared hard

Art Unit: 2161

disk that is also used to store workgroup application files" (Christie: col. 3, lns. 9-23).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica M. Pyo whose telephone number is 571-272-8192. The examiner can normally be reached on Mon-Fri 6:30 - 3:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monica M Pyo
Examiner
Art Unit 2161

2/1/2006

BC


SAFET METJAHIC
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100